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FINAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Yoshimi ISHIBASHI et al.

Group Art Unit: 1774

Serial Number: 09/900,979

Examiner: T. Dicus

Filed: July 10, 2001

For: ANTIFALSIFICATION RECORDING PAPER AND PAPER SUPPORT THEREFOR

RESPONSE UNDER 37 C.F.R. § 1.116  
TO THE FINAL OFFICE ACTION DATED MAY 21, 2003

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

August 21, 2003

Sir:

This paper is submitted in response to the Office Action dated May 21, 2003. Reconsideration and removal of the Final Action is respectfully requested in view of the remarks that follow.

Claim 1 of the present application is directed to a recording paper comprising a paper support, and a recording layer formed on the paper support, the paper support having a ribbon-shaped security element embedded therein; characterized in that:

the distance from the front surface (on the recording layer side) of the paper support to the front surface (on the recording layer side) of the security element is 1 to 7 times the thickness of the security element;

the distance from the rear surface (the surface opposite of the front surface) of the paper support to the rear surface (the surface opposite of the front surface) of the security element is 0.5 to 6 times the thickness of the security element;

the thickness of the paper support is 4 times to 10 times the thickness of the ribbon-shaped security element;

the thickness of the paper support is 40 to 250  $\mu\text{m}$ ;  
the ribbon-shaped security element has a width of 0.3 mm to 20 mm and a thickness of 10  $\mu\text{m}$  to 80  $\mu\text{m}$ ; and

the recording layer is a heat-sensitive recording layer comprising an electron-donating compound, an electron-accepting compound and a binder.

Claim 20 is directed to a paper support for a recording paper, the paper support having a ribbon-shaped security element embedded therein; characterized in that the paper support and the ribbon-shaped security element each has a predetermined size, and the

ribbon-shaped security element is located in a predetermined position inside the paper support, as described in claim 1.

The recording paper of the present invention as recited in the claims which comprises a paper support having embedded therein a counterfeit prevention element, has little uneven thickness and creates recorded images with excellent quality.

The importance of specifying sizes and positional relationship between the ribbon-shaped security element and the paper support, which are essential features of the present invention, is concretely described in page 12, line 2 to page 14, line 24 of the present specification. The remarkable effects achieved by these features and which cannot be reasonably expected from the prior art are illustrated in the Examples of the present application (page 47, line 10 to page 54, line 9, and Table 1 of the specification).

Claims 1, 6-14, 16, 19, 20 and 25-33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Washburn in view of Isherwood, Nitta and further in view of Ellis.

Washburn (U.S. Patent No. 6,139,065) discloses a process for making security paper that comprises a step for applying a filament to a surface of the paper by rollers while applying pressure and

heat, and imprinting a textured pattern into the filament. In Washburn, the filament is not wholly embedded under the surface of the paper. The filament is pressed into the paper by calendaring such that an upper surface of the filament is substantially coplanar with the surface of the paper or such that an upper surface of the filament remains raised above the surface of the paper. (Col. 2, lines 3-8). Washburn does not disclose the thickness of the paper or the dimensions of the filament before or after the calendaring step. Washburn also does not disclose a recording paper. Washburn is directed to the manufacture of security paper such as bank notes, currency, checks, stock certificates and bonds.

Isherwood (U.S. Patent No. 6,199,911) is cited as teaching the coloring, coating, metallization and vapor deposition of metal onto a security element. The Office identifies Isherwood as disclosing a thread or security element having a width within the range recited in claim 20. However, Isherwood does not disclose a recording paper and does not disclose the specific thickness of paper and security element.

Nitta (U.S. Patent No. 6,028,028) discloses a recording sheet which comprises a support (I) with an image-recording/receiving layer (II) formed on the surface thereof, wherein the support (I) has a laminated structure comprising a woven fabric (A) or unwoven fabric (A'), an adhesive, and a stretched resin film (B).

However, Nitta does not disclose a paper support. In Nitta, "synthetic paper" is disclosed as an example of the stretched resin film (Col. 5, lines 58-62), but the synthetic paper is not a paper support. Nitta nowhere discloses a security element for antifalsification. "Warp" and "weft" threads in Nitta are not security elements - they are the materials constituting woven fabric (A) (Col. 2, lines 31-37).

Ellis (U.S. Patent No. 5,501,938) discloses a technique for photo (laser)-induced ablation-transfer imaging/recording.

The 35 U.S.C. § 103(a) rejection is not proper. First, Washburn cannot be properly modified to provide a recording paper as claimed in the present application. The invention of Washburn is a security paper where a security element is provided at the surface of a paper support by pressing the element into the support (instead of embedding the security element in the paper at the time

the paper is manufactured). The process of Washburn is intended to avoid the cost of embedding a filament into the paper at the time the paper is manufactured. (See Col. 1, lines 44-47). In light of this fact, Washburn cannot be properly modified to fully embed the security element below the surfaces of the paper. A prior art reference cannot be properly modified under 35 U.S.C. § 103(a) where the modification will destroy the invention on which the reference is based. See *Ex parte Hartmann*, 186 USPQ 366, 367 (Bd. App. 1974). See also MPEP §2143.01, page 2100-127 (Rev. 1. Feb. 2003).

Second, proper motivation to include a recording layer on the surface of the Washburn paper does not exist because Washburn is directed to security papers of the type noted above. The Office has not explained why a person of ordinary skill in the art would have been motivated to provide a recording layer on security paper as disclosed in Washburn. A recording layer on such security paper would be detrimental.

Third, Isherwood, Nitta and Ellis do not support the proposed modifications of Washburn.

(a) An object of the present invention is to provide a recording paper that has an antifalsification property, high quality of recorded images free of missing dots on the surface of a recording layer at a security element portion, no wrinkles during production, no uneven thickness on the surface of the recording material, and no corrugation when rolled up, and that is easy to produce (page 3, lines 2 to 11 of the present specification). In order to achieve this object, as set forth in the amended Claims 1 and 20, the present invention is characterized in that the sizes (dimensions, thickness, etc.) of the paper support and security element, and the positional relationship of the two, are specifically defined.

(b) Washburn aims at providing security paper having security features to prevent illicit copying and forgery and reducing the manufacturing costs of the security paper. In contrast, the main object of the present invention is "to improve the quality of recorded image on the security element portion, and to prevent wrinkles, uneven thickness and corrugation." This object is not recognized in Washburn.

The present inventors discovered that only when the paper support and the ribbon-shaped security element wholly embedded in the paper support have specific sizes and positional relationships, is the above object is achieved.

The filament of Washburn is pressed into the surface of the paper using a calendaring roll in such a manner that it becomes coplanar with the surface of the paper or remains raised above the surface of the paper.

In other words, in Washburn, the above-described object of the present invention is not recognized, and therefore its positional relationship between the security element (filament) and paper is totally different from that of the present invention. Furthermore, in Washburn, because the filament is placed on the surface of the paper, the effects of the present invention, i.e., improving the quality of recorded image on the security element portion, and preventing wrinkles, uneven thickness and corrugation, cannot be achieved. Moreover, since Washburn does not intend to record images on the surface of the security paper having a filament embedded therein, it does not disclose a heat-sensitive recording layer.



Therefore, Washburn neither suggests nor motivates a skilled artisan to improve security paper to arrive at the present invention.

(c) Isherwood aims at improving anti-counterfeitable qualities of security paper and discloses security paper comprising a security element that comprises a reflective metallic layer provided on a light transmitting polymeric substrate, the security element being wholly or partially embedded in the security paper.

The Office asserts that Isherwood discloses the sizes of the ribbon-shaped security element and the paper support employed in the present invention, and that optimizing the thickness and thickness ratio is experimental modification for a person skilled in the art. However, in Isherwood, the above-described object of the present invention is not recognized, nor does it concretely disclose the sizes and positional relationship between the security element and the paper support. (It is stated in the Action that the thickness of 10 to 80 microns of the security element is inherent in Isherwood because "width multiplied by width equals thickness". (First sixteen lines of paragraph 4 on page 3 of the Action). Width times width is area - not thickness. Since the

object of the present invention is not recognized, it is impossible to optimize the sizes and thickness of the security element and the paper support Of Isherwood to satisfy the object. Optimization must be of a result-effective variable, but the Office has not identified the result. Furthermore, Isherwood does not intend to record images on the surface of the security paper having a filament embedded therein since it does not disclose a heat-sensitive recording layer.

Therefore, there is no suggestion or motivation provided by Isherwood (alone or in combination with other prior art or the knowledge generally available in the art) to improve the security paper of Washburn to arrive at the present invention.

(d) Nitta discloses a recording sheet having excellent printability, water-proofness, tear resistance and non-curling properties that is useful for posters and signboards. However, Nitta nowhere discloses security paper having an antifalsification property. Furthermore, as described above, Nitta does not disclose a paper support and does not disclose a security element. The failure to disclose a security element is not unexpected because Nitta does not aim at providing an antifalsification property.

Therefore, Nitta also nowhere suggests nor motivates a skilled artisan to improve Washburn or to combine Washburn with Nitta.

(e) Ellis discloses a technique for ablation-transfer imaging/recording. The invention of Ellis neither relates to the field of security paper nor aims at providing security paper for banknotes and the like with an antifalsification property. Moreover, photo-induced ablation-transfer imaging/recording employed in Ellis and heat-sensitive recording employed in the present invention are different techniques. The technical field to which Ellis pertains and its objectives are totally different from those of Washburn. Therefore, there is neither a suggestion nor a motivation to combine Washburn with Ellis.

Accordingly, the combined teachings of Washburn, Isherwood, Nitta, and Ellis fail to support a case of *prima facie* obviousness of claims 1 and 20, and of claims 6-14, 16, 19 and 25-33 dependent thereon. Removal of the 35 U.S.C. § 103(a) rejection is in order and is respectfully solicited.

The foregoing is believed to be a complete and proper response to the Office Action dated May 21, 2003, and is believed to place this application in condition for allowance. If, however, minor

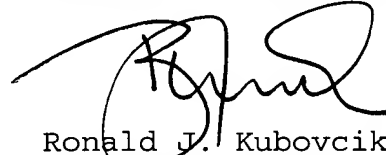
issues remain that can be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.

In the event that this paper is not considered to be timely filed, applicants hereby petitions for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 111833.

In the event any additional fees are required, please also charge our Deposit Account No. 111833.

Respectfully submitted,

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